

DRAFT Sample for February KBE Discussion DRAFT

Annotated Sample Template for Revised KY Program of Studies (using draft Primary Science)	
Primary SCIENCE	Some Notes about Format
<p>Big Idea: Physical Science - Structure and Transformation of Matter</p> <p>A basic understanding of matter is essential to the conceptual development of other big ideas in science. In the elementary years of conceptual development, students will be studying properties of matter and physical changes of matter at the macro level through direct observations, forming the foundation for subsequent learning. The use of models (and an understanding of their scales and limitations) is an effective means of learning about the structure of matter. Looking for patterns in properties is also critical to comparing and explaining differences in matter.</p> <p>Academic Expectations</p> <p>2.1 Students understand scientific ways of thinking and working and use those methods to solve real-life problems.</p> <p>2.2 Students identify, analyze, and use patterns such as cycles and trends to understand past and present events and predict possible future events.</p> <p>2.4 Students use the concept of scale and scientific models to explain the organization and functioning of living and nonliving things and predict other characteristics that might be observed.</p>	<p>Big Ideas for each content area are drawn from the KY 4.0 CCA documents. CCA work in 2004-05 used national curriculum resources to identify the Big Ideas, or essential conceptual learning, for each discipline.</p> <p>Academic Expectations will be listed with each Big Ideas.</p>
<p>Enduring Knowledge – Primary Understandings</p> <p><i>Students will understand that</i></p> <ul style="list-style-type: none"> • Objects are made of one or more materials, such as paper, wood, and metal. • Objects can be described in terms of the materials they are made of and their physical properties. • Things can be done to materials to change some of their properties, but not all materials respond the same way to what is done to them. • Matter (water) can exist in different states – solid, liquid, and gas, 	<p>Enduring Knowledge statements are developed using national resources and language from CCA document. Science and math will have different statements across grades and soc studies and ELA will be more similar across grades.</p>
<p>Primary Skills and Concepts</p> <p><i>Students will</i></p> <ol style="list-style-type: none"> 1. use senses to observe and describe properties of material objects (color, size, shape, texture, flexibility, magnetism) 2. use appropriate tools (e.g., balance, metric ruler, thermometer, graduated cylinder) to measure and record length, width, volume, temperature, and mass of material objects and to answer questions about objects and materials [TECH CONNECTIONS] 3. investigate the physical properties of water as a solid, liquid, and gas 4. classify water and other matter using one or more physical properties 5. observe, predict, and investigate the ways properties of material objects can be changed 6. predict, observe, and describe patterns of properties in matter, such as how materials will interact with each other 7. work individually and with others to investigate properties of materials, documenting and communicating (speak, draw, write, demonstrate) observations, designs, procedures, and results [LITERACY & TECH CONNECTIONS] 8. answer questions about the properties of matter using information from a variety of print and 	<p>The related CCA language is used to develop the Skills & Concepts section (to assure alignment with CCA), but includes greater depth and breadth of content and skills than CCA.</p> <p>Literacy (#7 & #8) and Technology (#2 & #7) Connections are embedded with the content in this section as a guide to instruction. <i>Final document may include “[LIT & TECH CONNECTIONS]”</i> designations at the end of each Skills and Concepts descriptor.</p>

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non-print sources [LITERACY & TECH CONNECTIONS]	
<p>Related KY CCA and Instructional Support Materials:</p> <p>SC-EP-1.1.1 Students will classify material objects by their properties.</p> <p><i>SC-EP-1.1.2 Students should understand that objects have many observable properties such as size, mass, shape, color, temperature, magnetism, and the ability to interact and/or to react with other substances. Some properties can be measured using tools such as metric rulers, balances, and thermometers.</i></p> <p>SC-EP-1.1.3 Students will describe the properties of water as it occurs as a solid, liquid, or gas.</p>	<p>The language of CCA related to each Big Idea is used to develop the Skills and Concepts section and to assure the alignment with POS. Only the CCA codes may be kept in the final document as an electronic link to the CCA document.</p>

Skills and Concepts

There will be one set of Skills and Concepts for each Big Idea, in each content area, for each grade level or grade span (Primary, grade 4, grade 5, grade 6, grade 7, grade 8, and High School). For example, science will have 7 big ideas for each grade level, mathematics will have 5 big ideas for each grade, and so on. Typically, this would mean about 1-2 pages for each Big Idea at a grade level. *To the degree possible*, Skills and Concepts will be listed in a general order of a developmental continuum or increasing complexity – with more basic concepts and skills listed earlier in the list and the more complex later on in the list. This should be most useful at the Primary and High School levels, since they include grade spans rather than single grade levels.

Here are two examples of the increasing complexity:

- At the Primary level, skills and concepts will also be arranged at times within a single “bullet” to show a progression of complexity. In writing for example, it might say: “develop purpose / controlling idea with ideas, information that are logical, justified, and relevant - beginning with meaningful drawings, symbols, and letters, and moving to appropriate written language (e.g., words/labels, phrases, sentences, paragraph).” Note that a progression of skills is included within the single statement.
- At the High School level, (Big Idea) Algebraic Concepts will first list those skills and concepts that are basic to an Algebra I course and then continue the list with skills and concepts more appropriate to Algebra II courses. While there would be some overlap of skills and concepts for both courses, the general arrangement - from more basic to more complex – will assist schools in using the skills and concepts progression to develop both traditional Algebra I and II courses or Integrated Mathematics courses I and II that include algebraic concepts and skills.

Cross-Grade Differences and Local Curriculum Mapping

To show grade level differences across grades, underlining will be used when a new skills or concept is *first* introduced. This will be helpful to teachers in that it will signal which skills have already been introduced and can be built upon and which skills may need additional scaffolding when planning instruction. The following two sample science templates illustrate grade level differences from Primary to Grade 4 and how the final POS document might look. The blank cells are included in the template to show how the final POS format could **support local curriculum mapping**.

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Illustrative Template for Revised KY Program of Studies (using draft Primary and Grade 4 Science)	
Primary SCIENCE	
<p>Big Idea: Physical Science - Structure and Transformation of Matter</p> <p>A basic understanding of matter is essential to the conceptual development of other big ideas in science. In the elementary years of conceptual development, students will be studying properties of matter and physical changes of matter at the macro level through direct observations, forming the foundation for subsequent learning. The use of models (and an understanding of their scales and limitations) is an effective means of learning about the structure of matter. Looking for patterns in properties is also critical to comparing and explaining differences in matter.</p> <p>Academic Expectations</p> <p>2.1 Students understand scientific ways of thinking and working and use those methods to solve real-life problems.</p> <p>2.2 Students identify, analyze, and use patterns such as cycles and trends to understand past and present events and predict possible future events.</p> <p>2.4 Students use the concept of scale and scientific models to explain the organization and functioning of living and nonliving things and predict other characteristics that might be observed.</p>	
<p>Enduring Knowledge – Primary Understandings</p> <p><i>Students will understand that</i></p> <ul style="list-style-type: none"> • Objects are made of one or more materials, such as paper, wood, and metal. • Objects can be described in terms of the materials they are made of and their physical properties. • Things can be done to materials to change some of their properties, but not all materials respond the same way to what is done to them. • Matter (water) can exist in different states – solid, liquid, and gas, 	<p>Local Related Units of Study</p> <div>Local schools can use this space for curriculum mapping purposes</div>
<p>Primary Skills and Concepts</p> <p><i>Students will</i></p> <ol style="list-style-type: none"> 1. use senses to observe and describe properties of material objects (color, size, shape, texture, flexibility, magnetism) 2. use appropriate tools (e.g., balance, metric ruler, thermometer, graduated cylinder) to measure and record length, width, volume, temperature, and mass of material objects and to answer questions about objects and materials [TECH CONNECTIONS] 3. investigate the physical properties of water as a solid, liquid, and gas 4. classify water and other matter using one or more physical properties 5. observe, predict, and investigate the ways properties of material objects can be changed 6. predict, observe, and describe patterns of properties in matter, such as how materials will interact with each other 7. work individually and with others to investigate properties of materials, documenting and communicating (speak, draw, write, demonstrate) observations, designs, procedures, and results [LITERACY & TECH CONNECTIONS] 8. answer questions about the properties of matter using information from a variety of print and non-print sources [LITERACY & TECH CONNECTIONS] 	<p>Local Related Assessment Tasks</p> <div>Local schools can use this space for assessment mapping purposes</div> <p>Local Literacy and Technology Connections</p> <div>Local schools can use this space for mapping connections</div>
<p><i>Electronic link to Related KY [CCA SC-EP-1.1.1, SC-EP-1.1.2, SC-EP-1.1.3] and Instructional Support Materials</i></p>	

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